

CLAIMS

What is claimed is:

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1. A rotary cutting die for cutting corrugated board comprising:
 - (a) a base adapted to be mounted to a rotary cylinder;
 - (b) at least one trim cutting blade secured to the base and extending outwardly therefrom for trimming scrap from a sheet of corrugated board; and
 - (c) at least one trim stripper secured to the base adjacent the trim blade and projecting outwardly from the base for stripping trim cut from the sheet of corrugated board, the trim stripper including an angled outer stripper surface that is angled outwardly and away from the trim blade in such a fashion that at least a portion of the angled surface extends outwardly past the height of the trim blade.
 2. The rotary cutting die of claim 1 wherein the trim stripper includes an edge that normally faces the trim blade, and wherein the angled stripper surface and the edge facing the trim blade form an angle greater than 90 degrees.
 23. The rotary cutting die of claim 1 wherein the cutting die is adapted to work in conjunction with a rotary anvil to trim a corrugated board sheet passing through a nip area formed between the rotating cutting die and anvil, and wherein the angled outer surface of the trim stripper acts to engage a leading edge of the corrugated board sheet as it enters the nip area and further the outer angled surface of the trim stripper contacts and holds one or more cut pieces of trim scrap against

the anvil as the cut trim scrap exits the nip so as to cause the trim scrap to be directed generally downwardly by the anvil as the anvil transfers the cut trim scrap away from the nip area.

4. The rotary cutting die of claim ⁵2 wherein the edge of the trim stripper that normally faces the trim blade includes an upper beveled filler region that normally lies adjacent an upper beveled portion of the trim blade such that the trim stripper may assume a flush mounted position adjacent the trim blade.

3. The rotary cutting die of claim 1 wherein the trim stripper is constructed of a closed cell rubber having a durometer of approximately ^{70 100}30-60.

6. The rotary cutting die of claim 1 wherein the cutting die is adapted to rotate in a given direction and the outer angled surface of the trim stripper intersects with an edge of the stripper that normally faces the trim blade to form an angle greater than 90 degrees, and wherein the upper surface of the stripper is angled such that it extends from the intersection with the edge outwardly with respect to the base and in the general direction that the cutting die is adapted to rotate such that the angled upper surface of the stripper leads the adjacent trim blade.

4. The rotary cutting die of claim ⁷6 wherein the angled upper surface of the trim stripper includes a leading portion that extends outwardly past the height of the trim blade and a trailing portion that assumes a height that is approximately the height of the trim blade.

10/9. The rotary cutting die of claim 8⁹ wherein the two angled upper surfaces form an apex that forms a demarcation between the respective upper surfaces.

10/9. The rotary cutting die of claim 8⁹ wherein the two angled upper surfaces form an apex that forms a demarcation between the respective upper surfaces.

11 ~~10.~~ The rotary cutting die of claim 1 including both trailing and leading trim blades and wherein at least one trim stripper is disposed adjacent the trailing trim blade and the leading trim blade.

trim blade and the leading trim blade.

1211. The rotary cutting die of claim 10 wherein the outer stripper surface of each trim stripper is angled outwardly and away from the adjacent trim blade.

15 12. The rotary cutting die of claim 1 wherein the trim stripper includes a flexible trim deflector.

flexible trim deflector.

17 13. The rotary cutting die of claim 15 wherein the trim deflector is spaced from and leads the trim cutting blade. 1

spaced from and leads the trim cutting blade. ¹⁷
¹⁴ 14. The rotary cutting die of claim ~~13~~ wherein the trim deflector assumes
the shape of a flexible finger. ¹⁴

the shape of a flexible finger.

19 15. The rotary cutting die of claim 14 wherein the trim stripper includes a main body portion and wherein the flexible finger extends outwardly from the main body portion.

2016. The rotary cutting die of claim 19 wherein the finger is relatively thin compared to its transverse width.

4/17. The rotary cutting die of claim 1 wherein the angled surface of the trim stripper includes a trailing portion disposed adjacent the trim blade and a leading portion spaced forwardly of the trim blade and wherein there is provided a trim deflector that is disposed adjacent the leading portion of the angled surface and projects outwardly therefrom past the height of the trim blade.

21/18. The rotary cutting die of claim ¹⁹15 wherein the flexible finger extends transversely across the main body portion of the trim stripper.

11/19. The rotary cutting die of claim ¹⁵12 wherein the trim stripper includes a main body portion and wherein ~~the~~ flexible finger projects outwardly from the main body portion; and wherein the main body portion includes a leading edge and a trailing edge, the trailing edge being disposed adjacent to the trim blade; and wherein the flexible finger projects from the main body portion at a point adjacent the leading edge of the main body portion of the trim stripper.

13/20. The rotary cutting die of claim 1 wherein the cutting die is operative to cooperate with an anvil to trim a sheet of corrugated board passing through a nip area defined between the cutting die and the anvil, and wherein the trim stripper includes a flexible finger that in a non-compressed position extends outwardly past the trim blade, and wherein the flexible finger functions to curl around a portion of a piece of cut trim as the flexible finger and cut trim pass through the nip defined between the cutting die and the anvil.

14/21. The rotary cutting die of Claim ¹³20 wherein the length of the flexible finger is such that, in a compressed position, it generally overlies a top portion of the trip stripper and includes a terminal end that terminates short of the trim blade.

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22. A rotary cutting die for cutting corrugated board comprising:

- (a) a base;
- (b) at least one trim cutting blade secured to the base and extending outwardly therefrom for trimming scrap from a sheet of corrugated board; and
- (c) at least one trim stripper secured to the base adjacent the trim blade and projecting outwardly from the base for stripping trim cut from the sheet of corrugated board, the trim stripper including a body portion and a flexible deflector projecting outwardly from the body portion for engaging cut trim and generally assisting in controlling the movement of the cut trim after it has been cut by the cutting die.

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23. The rotary cutting die of claim 18 wherein the trim deflector is spaced from and leads the trim cutting blade.

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24. The rotary cutting die of claim ²³22 wherein the deflector assumes the shape of a flexible finger that extends outwardly from the body portion of the trim stripper.

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25. The rotary cutting die of claim ²⁵24 where the flexible finger extends transversely across the body portion of the trim stripper and extends outwardly past the height of the trim cutting blade.

27/26. The rotary cutting die of claim ²⁶25 wherein the finger is relatively thin compared to its transverse width.

24/27. The rotary cutting die of claim ²³22 wherein the body portion of the trim stripper includes an angled outer stripper surface that is angled outwardly and away from the trim blade in such a fashion that at least a portion of the angled surface extends outwardly past the height of the trim blade, and wherein the angled surface of the trim stripper includes a trailing portion disposed adjacent the trim blade and a leading portion spaced forwardly of the trim blade and wherein the trim deflector is disposed closer to the leading portion of the angled surface than the trailing portion of the angled surface.

28. A method of controlling and managing trim scrap cut from a sheet of corrugated board passing between a rotary cutting die and a rotating anvil comprising:

- (a) directing the sheet of corrugated board between the rotary cutting die and the rotating anvil;
- (b) engaging a trim edge portion of the sheet with an angled outer surface of a trim stripper carried by the cutting die and disposed adjacent a trim blade;
- (c) cutting the trim edge portion of the corrugated board sheet with the trim blade while compressing the trim stripper between the cutting die and the trim

edge portion being cut as the corrugated board passes between the cutting die and the anvil; and

(d) releasing the trim stripper as the trim stripper and cut trim edge portion pass through a nip defined between the anvil and the cutting die causing the angled outer surface of the trim stripper to expand outwardly and engage the cut trim edge portion and strip the cut trim edge portion from the trim blade.

29. The method of claim 28 wherein the sheet of corrugated board includes a leading edge and wherein the method includes directing the leading edge of the sheet of corrugated board into contact with the angled outer surface of the trim stripper.

30. The method of claim 28 including engaging the cut trim with a flexible deflector that forms a part of the trim stripper.

31. The method of claim 30 including engaging the cut trim with a back side of the deflector and effectively limiting the outward movement of the cut trim as it exits the nip between the cutting die and the anvil.

32. The method of claim 30 including curling the flexible deflector around the cut trim portion as the trim stripper and cut trim portion pass through the nip.

33. The method of claim 30 wherein the flexible deflector projects downwardly from the cutting die and as the deflector and cut trim portion exit the nip, the deflector engages the cut trim portion and deflects the same downwardly.

34. The method of claim 33 wherein the flexible deflector includes an elongated finger that projects from a main body portion of the trim stripper and wherein as the finger passes through the nip it tends to curl back and around a cut trim portion causing the cut trim portion to be held between the curled finger and the main body portion of the trim stripper.

35. The method of claim 34 wherein the finger is of a selected length such that when the finger curls back it does not extend substantially past the main body portion of the trim stripper.

36. A rotary cutting die for cutting corrugated board comprising:

- (a) a base;
- (b) at least one trim blade for cutting trim scrap from the corrugated board;
- (c) at least one resilient trim stripper mounted on the base adjacent the trim blade for stripping trim scrap from the trim board; and
- (d) the trim stripper including a body portion and a finger projecting outwardly from the body portion for engaging a piece of cut trim

37. The rotary cutting die of claim 36 wherein the body portion of the trim stripper includes an edge that normally faces the trim blade and an outer angled trim scrap engaging surface that extends from an upper portion of the edge outwardly and away from the trim blade such that the angled upper surface, when not compressed, projects outwardly past the trim blade.

38. The rotary cutting die of claim 37 wherein the angled upper surface and edge form an angle greater than 90 degrees but less than 180 degrees.

39. The rotary cutting die of claim 38 wherein the edge that normally faces the trim blade is secured flush against the trim blade.

40. The rotary cutting die of claim 38 wherein the trim stripper includes two distinct angled upper surfaces that permit the trim stripper to be reversed.

41. The rotary cutting die of claim 36 wherein the finger is spaced forwardly of the trim blade.

42. The rotary cutting die of claim 41 wherein the cutting die is adapted to cooperate with an anvil and wherein a nip is defined between the cutting die and the anvil, and wherein the finger is elongated and includes a terminal end that does not project substantially past the main body portion of the trim stripper when the finger assumes a curled configuration as it moves through the nip.

43. The rotary cutting die of claim 42 wherein in the curled configuration the flexible finger extends over and lies generally adjacent the body portion of the trim stripper.

44. The rotary cutting die of claim 43 wherein in the curled configuration the elongated finger may at least partially curl around a cut trim portion of the corrugated board and thereby control the movement of the cut corrugated trim as it exits the nip.